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Human–AI Collaboration and Adaptive Performance: Leadership and Decision Autonomy

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ABSTRACT

The growing integration of artificial intelligence (AI) into organizational work has implications for employee collaboration, technological demands, decision autonomy, and adaptive performance. This study examines the relationships among leadership vision, employee-AI collaboration, techno-overload, AI overreliance, decision autonomy, and adaptive performance. Cross-sectional survey data from 424 respondents were analyzed using partial least squares structural equation modeling (PLS-SEM). The results show that leadership vision is positively associated with employee-AI collaboration and decision autonomy. Employee-AI collaboration is positively associated with AI overreliance, decision autonomy, and adaptive performance, while techno-overload is strongly associated with AI overreliance. Decision autonomy exhibits the strongest direct association with adaptive performance and a significant positive indirect role in the relationship between employee-AI collaboration and adaptive performance. In contrast, the hypothesized negative relationships of techno-overload and AI overreliance with decision autonomy are not supported, nor is the proposed indirect relationship between techno-overload and adaptive performance through decision autonomy. The findings distinguish collaborative AI engagement from reliance-related concerns and highlight the relevance of decision autonomy to employee adaptability. The study contributes to understanding the relationships among organizational leadership, AI-related work experiences, and adaptive performance, offering practical considerations for maintaining employee discretion and responsible AI use in AI-enabled workplaces.

KEYWORDS

Leadership vision; employee-AI collaboration; techno-overload; AI overreliance; decision autonomy; adaptive performance

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1. Introduction

Artificial intelligence (AI) is increasingly integrated into organizational work processes, influencing how employees access information, perform tasks, and make decisions. Although AI offers opportunities to support information processing and task execution, its growing use also raises concerns about technological demands, reliance on AI-generated recommendations, and employees' discretion over work-related decisions. Research has examined employee-AI collaboration in relation to career-related outcomes (Kong et al., 2023) and technology overload in AI-enabled work environments (Zang & Li, 2025). Understanding these developments requires consideration of both organizational conditions and employees' experiences of working with AI.

Employee-AI collaboration represents an important dimension of AI-enabled work, emphasizing employees' active engagement with AI technologies in performing work-related tasks. Kong et al. (2023) examined employee-AI collaboration in relation to trust in AI and career sustainability. However, collaborative engagement may also be associated with greater reliance on AI assistance. Goh et al. (2025) investigated generative AI dependency and its psychological and behavioral correlates, highlighting the relevance of reliance-related concerns. Although collaboration and dependency represent distinct aspects of AI use, their relationships with employee decision-making and performance warrant further examination.

Technological demands introduce another consideration. As employees encounter increasingly complex digital systems and information-processing requirements, techno-overload may be associated with their reliance on AI assistance and perceptions of

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decision autonomy. Zang and Li (2025) examined technology overload in relation to AI introduction and employee creativity, demonstrating its relevance to AI-related work experiences. However, the relationships between techno-overload, AI overreliance, and decision autonomy remain relevant questions for understanding employees' experiences in AI-enabled workplaces.

Decision autonomy is particularly important when examining the relationship between AI-related work experiences and employee performance. Morgeson and Humphrey (2006) identified decision-making autonomy as a characteristic of work design, reflecting employees' discretion over work-related decisions. Adaptive performance concerns employees' responsiveness to changing work requirements and circumstances (Griffin et al., 2007). In AI-enabled workplaces, employees may use AI-generated information while retaining responsibility for work-related decisions. Decision autonomy may therefore represent a relevant explanatory link between collaborative AI engagement and adaptive performance, as well as between technological demands and adaptive performance.

Organizational leadership provides an additional perspective on AI-enabled work. Leadership vision emphasizes the communication of organizational direction and shared objectives, which may be particularly relevant when employees incorporate AI technologies into established work practices. Leadership perspectives highlight the importance of communicating direction and facilitating employee engagement (Northouse, 2014). Examining leadership vision in relation to employee-AI collaboration and decision autonomy allows organizational guidance to be considered alongside technological experiences and employees' perceived discretion.

Previous research has addressed employee-AI collaboration, generative AI dependency, technology overload, and decision autonomy from different perspectives (Goh et al., 2025; Kong et al., 2023; Morgeson & Humphrey, 2006; Zang & Li, 2025). Building on these studies, the present research examines how leadership vision, employee-AI collaboration, techno-overload, and AI overreliance relate to decision autonomy and adaptive performance within a common structural framework. Particular attention is given to the proposed indirect relationships between employee-AI collaboration and adaptive performance and between techno-overload and adaptive performance through decision autonomy. By examining these relationships jointly, the study seeks to clarify the roles of organizational leadership, collaborative AI engagement, technological demands, and decision-making discretion in employee adaptability, while providing practical considerations for AI-enabled work environments.

2. Literature Review and Hypothesis Development

This section develops the theoretical foundations and hypotheses for a six-construct framework examining adaptive performance in AI-enabled workplaces. Leadership vision, employee-AI collaboration, and techno-overload are considered antecedent constructs, while AI overreliance and decision autonomy are examined as potential mediating mechanisms linking AI-related work experiences to adaptive performance. Drawing on work-design theory, human-AI collaboration research, and emerging literature on AI dependency, the framework considers both potentially beneficial and adverse relationships associated with AI integration. The proposed hypotheses represent theoretically derived expectations that require empirical examination.

2.1 Leadership vision, employee-AI collaboration, and decision autonomy

Leadership vision refers to leaders' ability to articulate a clear organizational direction, communicate shared objectives, and provide guidance in responding to changing workplace demands. During organizational transformation, effective leadership communication can strengthen employees' trust, openness to change, and willingness to support new organizational initiatives (Men et al., 2020). As artificial intelligence (AI) becomes increasingly integrated into workplace activities, a clearly communicated organizational vision may help employees understand how emerging technologies align with organizational priorities. However, general leadership vision should not be equated with AI-specific leadership, as communicating organizational goals does not necessarily involve explicit guidance on AI adoption or implementation. Nevertheless, a coherent vision may provide a supportive organizational context in which employees are more willing to explore AI-enabled work practices.

Employee-AI collaboration involves employees working with AI systems to support information processing, problem-solving, and work-related decision-making. Kong et al. (2023) demonstrated that employee-AI collaboration serves as an important mechanism linking trust in AI with employee well-being and productivity. Furthermore, Raisch and Krakowski (2021) highlighted the automation-augmentation paradox, emphasizing the importance of balancing AI-driven automation with the enhancement of human capabilities. Together, these perspectives suggest that effective AI collaboration depends not only on technological capabilities but also on organizational conditions that encourage employees to engage constructively with AI. When leaders communicate clear organizational objectives, employees may be better positioned to understand the relevance of AI-supported work practices and incorporate AI-generated insights into their responsibilities. Although previous studies have not directly established a relationship between general leadership vision and employee-AI collaboration, the literature provides a theoretical basis for expecting a positive association.

H1: Leadership vision is positively associated with employee-AI collaboration.

Decision autonomy refers to employees' discretion in making work-related decisions and determining appropriate approaches to completing their tasks. Research on organizational decentralization indicates that granting employees decision-making authority is more effective when supervisors provide empowering leadership and support employees in exercising their discretion (Huettermann et al., 2024). Similarly, van Triest and Williams (2024) highlighted the managerial trade-off between the benefits of

delegating authority and the risks associated with reduced managerial control. These findings suggest that leadership practices can influence the conditions under which employees exercise autonomy. A clearly articulated leadership vision may establish shared organizational objectives while allowing employees flexibility in determining how those objectives are achieved. Such clarity may reduce uncertainty and support independent decision-making without requiring excessive managerial intervention. However, leadership vision does not necessarily guarantee autonomy, particularly when leaders retain centralized control over important decisions. Accordingly, the present study proposes a positive relationship between leadership vision and decision autonomy, while recognizing that the relationship requires empirical examination.

H2: Leadership vision is positively associated with decision autonomy.

2.2 Employee-AI collaboration, overreliance, and decision autonomy

Employee-AI collaboration enables employees to access information, explore alternative solutions, and obtain analytical support for work-related tasks. However, repeated engagement with AI may also increase reliance on AI-generated recommendations. Klingbeil et al. (2024) experimentally examined the extent and consequences of overreliance on AI advice, highlighting the potential risks of excessive reliance on algorithmic recommendations. Similarly, Goh et al. (2025) developed and validated a multidimensional measure of generative AI dependency, providing a framework for understanding problematic patterns of AI reliance. Although AI dependency and overreliance are related, they are not identical: dependency concerns a broader pattern of reliance on AI, whereas overreliance involves placing excessive weight on AI outputs, potentially at the expense of independent evaluation. Productive collaboration may therefore coexist with critical judgment, while repeated reliance on AI recommendations may encourage employees to defer increasingly to AI-supported decisions. Building on this distinction, the present study examines whether employee-AI collaboration is positively associated with AI overreliance.

H3: Employee-AI collaboration is positively associated with AI overreliance.

Employee-AI collaboration may also support decision autonomy when employees retain discretion over how AI-generated information is interpreted and applied. Raisch and Krakowski (2021) emphasized the tension between AI-driven automation and the augmentation of human capabilities, suggesting that AI integration can either complement or substitute for human judgment. Similarly, Vaccaro et al. (2024), in a systematic review and meta-analysis, demonstrated that the effectiveness of human-AI combinations varies across tasks and collaboration arrangements. Although these studies primarily address human-AI complementarity and performance rather than decision autonomy, they highlight the importance of preserving meaningful human involvement. From a work-design perspective, AI may expand the range of alternatives available to employees and reduce informational constraints on their decisions. When employees retain authority to evaluate recommendations, reject unsuitable outputs, and select courses of action, collaboration with AI may support their perceived decision-making discretion. However, greater access to information does not necessarily increase formal decision authority, and AI systems may also constrain discretion when their recommendations become mandatory or difficult to challenge. Thus, the proposed positive relationship depends on AI functioning as a supportive rather than controlling resource.

H4: Employee-AI collaboration is positively associated with decision autonomy.

2.3 Techno-overload, AI overreliance, and decision autonomy

Techno-overload refers to a form of technostress in which technology-related demands require employees to work faster, process greater amounts of information, or manage more tasks than they can comfortably accommodate. In AI-enabled workplaces, continuous technological updates, expanding information flows, and expectations of rapid responses may intensify employees' cognitive and temporal demands. Zang and Li (2025) found that technology overload weakened the positive relationships between AI introduction and perceived job autonomy and job feedback, suggesting that excessive technological demands may limit the benefits of AI integration. Although their study examined a moderating effect rather than the direct relationships proposed here, its findings highlight the potential consequences of technology overload for employees' work experiences.

Techno-overload may encourage employees to rely excessively on AI-generated recommendations as a means of managing competing demands and reducing cognitive effort. When employees face time pressure and information overload, accepting AI-generated suggestions without sufficient independent evaluation may become an expedient strategy for completing work-related tasks. Research on AI reliance indicates that individuals may place excessive trust in algorithmic recommendations, potentially compromising independent judgment (Klingbeil et al., 2024). Although this evidence does not directly establish a relationship between techno-overload and AI overreliance, it supports the plausibility of such a mechanism. Employees experiencing greater technological demands may therefore become more dependent on AI-supported decisions rather than critically evaluating every recommendation. Accordingly, the following hypothesis is proposed:

H5: Techno-overload is positively associated with AI overreliance.

Techno-overload may also constrain employees' decision autonomy by increasing perceived time pressure, cognitive demands, and the need to respond quickly to technology-driven tasks. When technological demands exceed employees' available resources, they may have fewer opportunities to evaluate alternatives, exercise discretion, or independently determine how work should be completed. From a work-design perspective, these pressures may reduce employees' perceived control over their decision-making processes, even when their formal decision authority remains unchanged. Zang and Li (2025) provide related evidence that

technology overload can undermine the beneficial relationship between AI introduction and job autonomy, although their findings do not establish a direct negative effect on decision autonomy. Furthermore, the relationship may depend on organizational conditions, as employees with sufficient support and discretion may manage technological demands without experiencing reduced autonomy. Nevertheless, the resource constraints associated with techno-overload provide a theoretical basis for expecting a negative association.

H6: Techno-overload is negatively associated with decision autonomy.

2.4 AI overreliance, decision autonomy, and adaptive performance

AI overreliance refers to excessive dependence on AI-generated recommendations that may weaken employees' willingness or ability to exercise independent judgment. Goh et al. (2025) developed a multidimensional framework of generative AI dependency that identifies problematic patterns of reliance on AI systems. Although dependency is broader than overreliance on individual recommendations, both concepts raise concerns about employees' capacity to evaluate information independently. Related research by Liu et al. (2024) found that algorithmic dependence intensified the adverse relationship between algorithmic management and employees' improvisation capability, highlighting the potential risks of excessive reliance on algorithmic systems. However, algorithmic dependence under managerial control differs from voluntary reliance on AI decision support. In workplace decision-making, employees who routinely defer to AI-generated recommendations may become less inclined to question outputs, consider alternatives, or exercise independent discretion. Nevertheless, reliance on AI does not necessarily reduce formal decision authority, and the proposed relationship primarily concerns employees' perceived decision-making discretion. Accordingly, the following hypothesis is proposed:

H7: AI overreliance is negatively associated with decision autonomy.

Adaptive performance refers to employees' ability to adjust their behaviors, strategies, and work practices in response to changing demands, uncertainty, and unfamiliar situations. Recent research suggests that work autonomy can facilitate adaptive performance by enabling employees to modify their approaches and respond flexibly to changing circumstances. Lau and Aguirre Reid (2026), using data from 1,259 employees, found that work method and work criteria autonomy were positively related to adaptive performance through sequential mechanisms involving job crafting and demands-abilities fit, whereas work scheduling autonomy did not show the same pattern. These findings indicate that the relationship between autonomy and adaptation may depend on the type of discretion employees possess. Decision autonomy may be particularly relevant because it allows employees to evaluate alternatives, select appropriate responses, and adjust decisions when established procedures become ineffective. Although decision autonomy is narrower than the broader work-autonomy dimensions examined in previous research, greater discretion over work-related decisions may facilitate timely and context-sensitive responses to unexpected demands. Therefore, the following hypothesis is proposed:

H8: Decision autonomy is positively associated with adaptive performance.

Employee-AI collaboration may also be directly associated with adaptive performance by expanding employees' access to information, supporting problem diagnosis, and facilitating the development of alternative responses to unfamiliar work situations. Kong et al. (2023) established the relevance of employee-AI collaboration to employee work outcomes. More recently, Nguyen et al. (2026) found that employee-AI collaboration was associated with in-role and extra-role performance through cognitive flexibility, suggesting that collaboration may provide resources that help employees respond more effectively to changing work demands. Related research by Jia et al. (2024) demonstrated that AI assistance can enhance employee creativity when human and AI capabilities are appropriately combined. Nevertheless, creativity, general job performance, and adaptive performance are distinct outcomes, and evidence concerning one should not be interpreted as direct confirmation of another. Employee-AI collaboration may support adaptation when employees critically evaluate AI-generated information and apply it flexibly to changing circumstances. Conversely, excessive reliance on AI may undermine independent judgment, suggesting that collaboration could have both beneficial direct associations and potentially adverse indirect associations. Accordingly, the following hypothesis is proposed:

H9: Employee-AI collaboration is positively associated with adaptive performance.

2.5 The mediating role of decision autonomy

Decision autonomy may serve as an important mechanism linking AI-related work experiences to employees' adaptive performance. Although employee-AI collaboration provides access to information, analytical support, and alternative solutions, these resources may contribute to adaptability only when employees retain sufficient discretion to evaluate recommendations and determine appropriate courses of action. Research on AI augmentation emphasizes the importance of combining technological capabilities with human judgment rather than replacing employee decision-making (Raisch & Krakowski, 2021). Furthermore, Lau and Aguirre Reid (2026) demonstrated that work autonomy is positively associated with adaptive performance through mechanisms involving job crafting and demands-abilities fit. Building on these perspectives, employee-AI collaboration may support adaptive performance by strengthening employees' perceived discretion to interpret AI-generated information, select alternative responses, and adjust their decisions to changing work demands. Thus, decision autonomy is proposed as a positive mediating mechanism linking employee-AI collaboration with adaptive performance.

H10: Decision autonomy positively mediates the relationship between employee-AI collaboration and adaptive performance.

Conversely, techno-overload may be indirectly associated with lower adaptive performance through reduced decision autonomy. Excessive technological demands can increase time pressure, cognitive strain, and expectations for rapid task completion, potentially limiting employees' opportunities to evaluate alternatives and exercise independent judgment. Zang and Li (2025) found that technology overload weakened the beneficial relationship between AI introduction and perceived job autonomy, suggesting that excessive technological demands may constrain the autonomy-related benefits of AI integration. When employees perceive less discretion over work-related decisions, they may have fewer opportunities to modify procedures, respond flexibly to unexpected situations, or develop alternative approaches to emerging problems. Accordingly, techno-overload is expected to be negatively associated with adaptive performance through reduced decision autonomy.

H11: Decision autonomy negatively mediates the relationship between techno-overload and adaptive performance.

2.6 Integrative perspective and scope of inference

The proposed six-construct framework integrates organizational leadership and AI-related work experiences to examine their associations with employees' adaptive performance. Leadership vision is conceptualized as an organizational resource that may facilitate employee-AI collaboration and enhance decision autonomy, whereas techno-overload represents a technological demand that may increase AI overreliance and constrain decision-making discretion. Employee-AI collaboration is expected to contribute to adaptive performance both directly and indirectly through greater decision autonomy, while techno-overload may exhibit a negative indirect association with adaptive performance through reduced decision autonomy. AI overreliance is further conceptualized as a potential constraint on employees' decision autonomy.

By distinguishing productive employee-AI collaboration from excessive reliance on AI-generated recommendations, the framework highlights the potentially enabling and constraining aspects of AI-enabled work. It further positions decision autonomy as a key mechanism linking AI-related work experiences to adaptive performance. In doing so, the study offers an integrated perspective on how organizational resources and technological demands may shape employees' capacity to adapt to changing work requirements.

3. Methodology

3.1 Research Design, Participants, and Procedure

This study employed a quantitative, cross-sectional survey design to examine the relationships among leadership vision, employee-AI collaboration, techno-overload, AI overreliance, decision autonomy, and adaptive performance. The dataset consisted of 424 completed questionnaire records.

The questionnaire collected demographic information on sex, marital status, age, educational attainment, occupational category, and employment tenure, together with information on AI-tool use frequency during the preceding week and average interaction duration. Among the 424 respondents, 50.9% were male and 49.1% were female. Most were unmarried (79.5%), and 49.3% were between 21 and 30 years of age. Regarding educational attainment, 73.1% reported holding a university or junior college qualification, while the service sector accounted for the largest occupational group (42.2%). In terms of employment tenure, 32.5% reported one year or less of work experience. Regarding AI use, 36.3% reported using AI tools one to five times during the preceding week, and 49.1% typically spent 10-30 minutes per interaction.

3.2 Measures

The questionnaire comprised six first-order constructs measured using 25 items adapted from established measurement scales and previous studies. Leadership vision was measured using five items adapted from Northouse (2014), employee-AI collaboration using five items from Kong et al. (2023), techno-overload using five items from Zang and Li (2025), AI overreliance using four items from Goh et al. (2025), decision autonomy using three items from Morgeson and Humphrey (2006), and adaptive performance using three items from Griffin et al. (2007).

All measurement items were translated into Chinese and adapted to reflect employees' experiences with AI technologies in the workplace. Wording and terminology were adjusted to improve clarity and contextual relevance while preserving the intended meaning of the original constructs. Responses were recorded on a seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

3.3 Data Screening and Analysis

Partial least squares structural equation modeling (PLS-SEM) was employed to examine the proposed relationships among the six constructs using SmartPLS 3. The analysis involved two stages. The measurement model was evaluated using indicator loadings, internal consistency reliability (Cronbach's alpha, rho_A, and composite reliability), convergent validity (average variance extracted), and discriminant validity assessed through the heterotrait-monotrait ratio (HTMT). Particular attention was given to distinguishing AI overreliance from the other AI-related constructs and decision autonomy from adaptive performance (Hair et al., 2022; Henseler et al., 2015).

The structural model was assessed using variance inflation factors (VIF), standardized path coefficients, effect sizes (f^2), and coefficients of determination (R^2 and adjusted R^2). Predictive relevance was examined using Stone-Geisser's Q^2 obtained through

the blindfolding procedure. Nine direct hypotheses (H1-H9) and two indirect hypotheses (H10-H11) were evaluated using bootstrapping with 5,000 resamples. The indirect effects concerned the proposed mediating role of decision autonomy in the relationships between employee-AI collaboration and adaptive performance and between techno-overload and adaptive performance. Statistical significance was assessed using bootstrapped confidence intervals (Hair et al., 2022). Given the cross-sectional design and reliance on self-reported measures, the results were interpreted as statistical associations rather than evidence of causality.

4. Results

4.1 Measurement Model Assessment

The measurement model was evaluated in terms of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Table 1 presents the standardized outer-loading ranges, Cronbach's alpha, rho_A, composite reliability (CR), and average variance extracted (AVE).

Standardized outer loadings ranged from 0.692 to 0.943, with nearly all indicators meeting the recommended threshold of 0.70. Internal consistency reliability was supported by Cronbach's alpha values ranging from 0.808 to 0.961, rho_A values from 0.810 to 0.962, and composite reliability (CR) values from 0.875 to 0.970. All reliability coefficients exceeded the recommended minimum of 0.70. Furthermore, average variance extracted (AVE) values ranged from 0.638 to 0.865, exceeding the recommended threshold of 0.50 for all six constructs. Overall, these findings indicate satisfactory indicator reliability, internal consistency reliability, and convergent validity (Hair et al., 2022).

Discriminant validity was evaluated using the Fornell-Larcker criterion (Table 2) and the heterotrait-monotrait ratio (HTMT; Table 3). For each construct, the square root of AVE exceeded its correlations with the other constructs, satisfying the Fornell-Larcker criterion. HTMT values ranged from 0.201 to 0.823, remaining below both 0.85 and 0.90. The highest HTMT was observed between decision autonomy and adaptive performance (0.823), followed by techno-overload and AI overreliance (0.804). These results support discriminant validity based on the reported point estimates, although confidence intervals for HTMT were not included in the supplied output (Henseler et al., 2015).

Table 1. Measurement model assessment

Construct	Loading	α	rho_A	CR	AVE
Leadership vision (LV)	0.876-0.930	0.945	0.946	0.958	0.820
Employee-AI collaboration (EAC)	0.909-0.943	0.961	0.962	0.970	0.865
Techno-overload (TO)	0.823-0.890	0.901	0.902	0.927	0.718
AI overreliance (AOR)	0.692-0.841	0.808	0.810	0.875	0.638
Decision autonomy (DA)	0.778-0.937	0.846	0.870	0.907	0.766
Adaptive performance (AP)	0.865-0.914	0.877	0.881	0.925	0.803

LV = Leadership Vision; EAC = Employee-AI Collaboration; TO = Techno-Overload; AOR = AI Overreliance; DA = Decision Autonomy; AP = Adaptive Performance.

Table 2. Fornell-Larcker criterion

Construct	LV	EAC	TO	AOR	DA	AP
LV	0.906					
EAC	0.417	0.930				
TO	0.282	0.479	0.847			
AOR	0.248	0.445	0.689	0.799		
DA	0.512	0.373	0.244	0.190	0.875	
AP	0.606	0.426	0.248	0.170	0.714	0.896

LV = Leadership Vision; EAC = Employee-AI Collaboration; TO = Techno-Overload; AOR = AI Overreliance; DA = Decision Autonomy; AP = Adaptive Performance.

Table 3. Heterotrait-monotrait ratios (HTMT)

Construct	LV	EAC	TO	AOR	DA	AP
LV						
EAC	0.436					
TO	0.304	0.514				
AOR	0.283	0.508	0.804			
DA	0.562	0.413	0.286	0.234		
AP	0.664	0.465	0.279	0.201	0.823	

LV = Leadership Vision; EAC = Employee-AI Collaboration; TO = Techno-Overload; AOR = AI Overreliance; DA = Decision Autonomy; AP = Adaptive Performance.

4.2 Structural Model Assessment

The structural model was evaluated using standardized path coefficients, bootstrapped standard errors, t statistics, p values, 95% confidence intervals, effect sizes (f^2), and explanatory power (R^2 and adjusted R^2). Table 4 summarizes the direct and indirect hypothesis-testing results in numerical order.

The model explained 17.4%, 49.5%, 29.5%, and 54.0% of the variance in employee-AI collaboration, AI overreliance, decision autonomy, and adaptive performance, respectively. The corresponding R^2, adjusted R^2, and Q^2 values are presented in Table 5. All four endogenous constructs exhibited positive blindfolding Q^2 values (.150-.429), indicating predictive relevance under the blindfolding procedure. The saturated-model and estimated-model SRMR values were .065 and .117, respectively, while the estimated-model chi-square (χ^2) and NFI were 1273.451 and .864. The estimated-model SRMR exceeded the commonly referenced threshold of .08, indicating a potential limitation in overall model fit (Henseler et al., 2014).

The results supported seven of the nine direct hypotheses (H1-H5, H8, and H9). Leadership vision was positively associated with employee-AI collaboration (H1: β = .417, p < .001) and decision autonomy (H2: β = .429, p < .001). Employee-AI collaboration was positively associated with AI overreliance (H3: β = .150, p = .002), decision autonomy (H4: β = .182, p = .006), and adaptive performance (H9: β = .186, p < .001). Techno-overload was positively associated with AI overreliance (H5: β = .620, p < .001), while decision autonomy was positively associated with adaptive performance (H8: β = .645, p < .001). However, neither the relationship between techno-overload and decision autonomy (H6: β = .061, p = .393) nor that between AI overreliance and decision autonomy (H7: β = −.040, p = .486) was statistically significant. Among the direct relationships, decision autonomy had the largest effect size on adaptive performance (f^2 = .779).

Table 4. Structural model and hypothesis testing

		Model 1							
Hypothesis	Path	Coefficient	STDEV	T statistic	*p* value	95%CI LL	95%CI UL	f^2	Decision
H1	LV → EAC	.417	.051	8.264	< .001	.308	.515	.211	Supported
H2	LV → DA	.429	.050	8.529	< .001	.323	.522	.214	Supported
H3	EAC → AOR	.150	.048	3.153	.002	.055	.247	.035	Supported
H4	EAC → DA	.182	.066	2.774	.006	.051	.305	.031	Supported
H5	TO → AOR	.620	.039	15.843	< .001	.546	.701	.588	Supported
H6	TO → DA	.061	.071	.856	.393	−.079	.193	.003	Not supported

H7	AOR → DA	−.040	.057	.697	.486	−.162	.068	.001	Not supported
H8	DA → AP	.645	.034	18.707	< .001	.576	.710	.779	Supported
H9	EAC → AP	.186	.043	4.340	< .001	.094	.262	.065	Supported
H10	EAC → DA → AP	.117	.043	2.745	.006	.034	.201		Supported
H11	TO → DA → AP	.039	.046	.846	.398	−.051	.129		Not supported

LV = Leadership Vision; EAC = Employee-AI Collaboration; TO = Techno-Overload; AOR = AI Overreliance; DA = Decision Autonomy; AP = Adaptive Performance.

Table 5. Model evaluation

Endogenous Construct	R^2	Adjusted R^2	Q^2
Employee-AI collaboration (EAC)	.174	.172	.150
AI overreliance (AOR)	.495	.493	.308
Decision autonomy (DA)	.295	.288	.217
Adaptive performance (AP)	.540	.538	.429
SRMR (estimated model)	.117		
SRMR (saturated model)	.065		

4.3 Indirect Effects

The mediating role of decision autonomy was examined using bootstrapped specific indirect effects (Table 4, H10-H11). Employee-AI collaboration had a statistically significant positive indirect association with adaptive performance through decision autonomy (H10: β = .117, STDEV = .043, t = 2.745, p = .006, 95% CI [.034, .201]), supporting H10. The direct association between employee-AI collaboration and adaptive performance was also significant (H9: β = .186, p < .001), indicating that the indirect association coexisted with a positive direct association.

In contrast, the indirect association between techno-overload and adaptive performance through decision autonomy was not statistically significant (H11: β = .039, STDEV = .046, t = .846, p = .398, 95% CI [−.051, .129]). Thus, H11 was not supported; the observed indirect coefficient was positive rather than negative as hypothesized. These findings should be interpreted as cross-sectional statistical associations and not as evidence of causal mediation.

5. Discussion

5.1 Interpretation of the Findings

The results reveal distinct relationships among leadership vision, employee-AI collaboration, techno-overload, AI overreliance, decision autonomy, and adaptive performance. Eight of the eleven hypotheses were supported, with decision autonomy exhibiting the strongest direct association with adaptive performance. Employee-AI collaboration was positively associated with decision autonomy, adaptive performance, and AI overreliance, whereas the hypothesized negative relationships involving techno-overload, AI overreliance, and decision autonomy were not supported.

Leadership vision was positively associated with employee-AI collaboration and decision autonomy, supporting H1 and H2. These findings are consistent with leadership perspectives emphasizing organizational direction and employee engagement (Northouse, 2014). They also relate to research examining employee-AI collaboration in organizational settings (Kong et al., 2023). Employees reporting stronger leadership vision tended to report greater collaborative engagement with AI and higher perceived decision autonomy, indicating that organizational direction and decision-making discretion are positively related within the examined model.

Employee-AI collaboration was positively associated with AI overreliance, decision autonomy, and adaptive performance, supporting H3, H4, and H9. The positive associations with autonomy and adaptive performance correspond to the relevance of

decision-making discretion and adaptive work behavior (Morgeson & Humphrey, 2006; Griffin et al., 2007). However, the positive relationship with AI overreliance introduces an additional consideration. While employee-AI collaboration has been examined as an aspect of AI-related work experiences (Kong et al., 2023), generative AI dependency represents a distinct phenomenon (Goh et al., 2025). The present findings indicate that greater collaboration with AI may coexist with higher reported AI overreliance, although this association does not establish a causal relationship.

Techno-overload demonstrated a substantial positive association with AI overreliance, supporting H5. This relationship is relevant to research examining technology-related demands in AI-enabled workplaces (Zang & Li, 2025). However, the hypothesized negative association between techno-overload and decision autonomy was not supported (H6). Similarly, AI overreliance showed a negative but statistically nonsignificant relationship with decision autonomy (H7). These findings indicate that the proposed negative relationships with decision autonomy were not demonstrated, despite the strong association between techno-overload and AI overreliance. They also warrant distinguishing reliance on AI assistance from perceived discretion over work-related decisions.

Decision autonomy exhibited the strongest direct association with adaptive performance, supporting H8. This result is consistent with work-design research emphasizing decision-making discretion (Morgeson & Humphrey, 2006) and the conceptualization of adaptive performance as responsiveness to changing work requirements (Griffin et al., 2007). Employee-AI collaboration also maintained a significant positive direct association with adaptive performance (H9), indicating that both constructs were positively related to adaptability within the structural model.

The indirect-effect analysis supported the mediating role of decision autonomy in the relationship between employee-AI collaboration and adaptive performance (H10). The significant indirect effect, together with the positive direct association, indicates that decision autonomy statistically accounted for part of this relationship. In contrast, the hypothesized negative indirect association between techno-overload and adaptive performance through decision autonomy was not supported (H11). The estimated indirect effect was positive and statistically nonsignificant, providing insufficient evidence for the proposed negative autonomy-related pathway. Given the cross-sectional design, these indirect relationships should be interpreted as statistical associations rather than causal processes.

The findings identify decision autonomy as an important correlate of adaptive performance and indicate that employee-AI collaboration is positively associated with both adaptability and AI overreliance. Although techno-overload was strongly associated with AI overreliance, the proposed negative relationships involving decision autonomy were not supported. These results provide a basis for further examining the distinct relationships among collaborative AI use, technological demands, AI reliance, and employees' adaptive work behavior.

5.2 Theoretical Implications

The study contributes to the literature on AI-enabled work by examining how leadership vision, employee-AI collaboration, techno-overload, AI overreliance, and decision autonomy relate to adaptive performance within a single structural framework. The findings provide empirical support for selected relationships while identifying limitations in the proposed negative associations involving technological demands, AI reliance, and decision autonomy.

The positive associations between leadership vision and both employee-AI collaboration and decision autonomy connect leadership perspectives emphasizing organizational direction (Northouse, 2014) with research on collaborative AI engagement (Kong et al., 2023). These findings support considering leadership vision alongside employee discretion when examining AI-enabled work. Rather than treating organizational guidance and autonomy as necessarily competing considerations, the results indicate that both may be positively associated within the same organizational context.

The positive relationships of employee-AI collaboration with adaptive performance and AI overreliance highlight the importance of distinguishing collaborative engagement from reliance-related concerns. Previous research has examined employee-AI collaboration in relation to work experiences (Kong et al., 2023), while generative AI dependency has been investigated as a separate psychological and behavioral phenomenon (Goh et al., 2025). The present findings indicate that these constructs are distinct yet positively related. Theoretical explanations of employee-AI collaboration may therefore benefit from considering reliance-related experiences alongside adaptive work outcomes rather than assuming that greater collaboration is associated exclusively with favorable outcomes.

The findings concerning techno-overload and AI overreliance further qualify the proposed relationships between technological demands and decision autonomy. Although techno-overload was strongly associated with AI overreliance, neither techno-overload nor AI overreliance exhibited a statistically significant negative association with decision autonomy. These results suggest that technological demands, reliance on AI assistance, and perceived decision-making discretion should be examined as conceptually distinct constructs. The distinction is consistent with work-design perspectives defining decision autonomy in terms of employees' discretion over work-related choices (Morgeson & Humphrey, 2006), which does not necessarily capture the extent to which employees independently evaluate AI-generated recommendations.

Decision autonomy demonstrated the strongest association with adaptive performance and a significant indirect role in the relationship between employee-AI collaboration and adaptive performance. These findings connect work-design perspectives on

autonomy (Morgeson & Humphrey, 2006) with research conceptualizing adaptive performance as responsiveness to changing work requirements (Griffin et al., 2007). The significant indirect association supports considering decision autonomy as a relevant statistical pathway linking collaborative AI engagement with adaptive performance. However, the corresponding indirect relationship involving techno-overload was not supported, indicating that the proposed autonomy-related pathways did not receive uniform empirical support.

The theoretical contribution of the study lies in distinguishing the relationships of collaborative AI engagement, technological demands, and AI reliance with decision autonomy and adaptive performance. The results support the relevance of decision autonomy within the collaboration-performance relationship while indicating that the anticipated negative autonomy-related associations require further investigation. These distinctions provide a basis for refining theoretical explanations of employee adaptability in AI-enabled workplaces.

5.3 Practical Implications

The findings offer practical considerations for organizations integrating AI technologies into employees' work processes. The positive associations of leadership vision with employee-AI collaboration and decision autonomy suggest that managers should communicate clear objectives for AI adoption while preserving employees' discretion over work-related decisions. Organizations may benefit from clarifying how AI tools support employees' responsibilities and professional judgment rather than focusing exclusively on technological implementation.

Employee-AI collaboration was positively associated with decision autonomy and adaptive performance, while decision autonomy exhibited the strongest direct relationship with adaptive performance. These findings suggest that organizations should consider integrating AI assistance into work processes without unnecessarily restricting employees' decision-making authority. Training initiatives may emphasize AI-related competencies, the evaluation of AI-generated information, and employees' responsibility for work-related decisions.

The positive associations of employee-AI collaboration and techno-overload with AI overreliance also warrant managerial attention. Although these relationships do not establish causality, organizations may benefit from encouraging the verification of AI-generated recommendations and maintaining appropriate human oversight. Managers could also review technological demands and workflow complexity to identify potential sources of excessive information-processing requirements.

The nonsignificant relationships involving techno-overload, AI overreliance, and decision autonomy suggest that organizations should assess employees' experiences rather than assume that technological demands or AI reliance necessarily reduce perceived autonomy. Regular evaluation of AI-related workload, reliance patterns, and decision-making discretion may help inform organizational practices. These recommendations should be viewed as considerations for managerial decision-making rather than interventions whose effectiveness has been established by the present study.

5.4 Limitations and Future Research

Several limitations should be considered when interpreting the findings. The cross-sectional research design limits causal inference and the establishment of temporal relationships among the constructs. Although significant direct and indirect associations were identified, these findings do not establish causality. Future research could employ longitudinal or experimental designs to examine these relationships over time.

The reliance on self-reported questionnaire data introduces potential common method bias and social desirability concerns. Respondents' perceptions of decision autonomy and adaptive performance may also differ from their actual work behavior. Future studies could incorporate supervisor evaluations, behavioral assessments, or objective performance indicators to strengthen measurement validity.

Although the structural model demonstrated explanatory power and positive blindfolding-based predictive relevance, the estimated-model fit indicated some limitations. Future research could reassess the proposed relationships using theoretically justified model specifications and out-of-sample predictive procedures.

The unsupported relationships involving techno-overload, AI overreliance, and decision autonomy warrant further investigation. Future studies could examine whether AI experience, task complexity, organizational support, or human oversight influence these relationships. Distinguishing perceived decision autonomy from the independent evaluation of AI-generated recommendations may also provide additional insight.

The generalizability of the findings should be assessed across different industries, occupational groups, and organizational settings. Research involving organizations with varying levels of AI integration could help determine whether the observed relationships remain consistent across different work environments.

6. Conclusion

This study examined the relationships among leadership vision, employee-AI collaboration, techno-overload, AI overreliance, decision autonomy, and adaptive performance. Based on survey data from 424 respondents, the findings identified significant positive associations between leadership vision and both employee-AI collaboration and decision autonomy. Employee-AI

collaboration was positively associated with AI overreliance, decision autonomy, and adaptive performance, while techno-overload demonstrated a substantial positive relationship with AI overreliance.

Decision autonomy exhibited the strongest direct association with adaptive performance and a significant positive indirect role in the relationship between employee-AI collaboration and adaptive performance. However, the hypothesized negative relationships involving techno-overload, AI overreliance, and decision autonomy were not supported, nor was the proposed indirect relationship between techno-overload and adaptive performance through decision autonomy.

The findings contribute to understanding AI-enabled work by distinguishing collaborative AI engagement from reliance-related concerns and identifying decision autonomy as an important correlate of adaptive performance. From a practical perspective, the results support managerial consideration of clear leadership direction, employee discretion, and responsible AI use. Although the cross-sectional design limits causal interpretation, the study provides a basis for further examining how organizational leadership, AI-related work experiences, and decision-making autonomy are associated with employee adaptability.

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